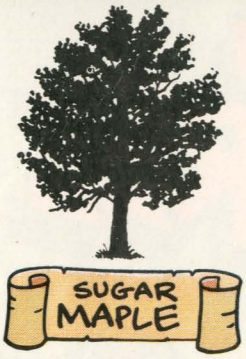
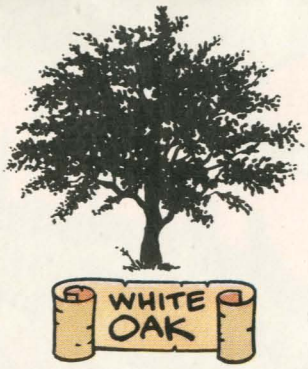
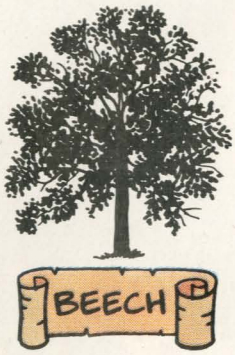
ONE GREEN TREE







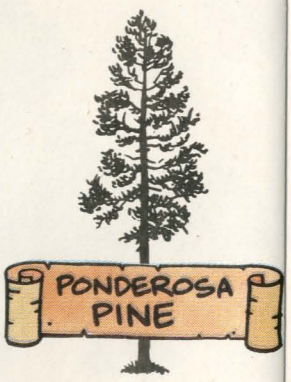
When we stand for a quiet moment under a tree we feel its cool shade, hear the soft rustle of its leaves, and see the green wonder of nature. It's easy to appreciate the beauty of the many different kinds of trees.

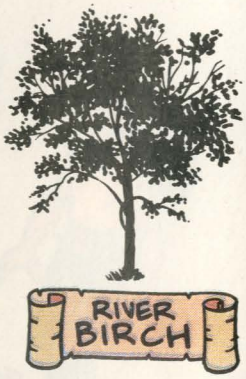
We have learned that trees bring more to our lives than beauty. Trees make the world a place where we can live.

Today, the great forests of the world are reduced to a smaller area than ever before. At no time in history have we had so few trees. Scientists warn that our world could change drastically in the near future if we continue to cut down trees without replacing them.

This book shows how trees use air, water, and soil to make the Earth a place where we can live. Think how every person needs air, water, and fertile soil. Then think how you can protect a grown tree, or plant a new one.

By helping even one green tree to live, you can make the world a better place.





This educational comic book has been reviewed by the following organizations:

National Association of Conservation Districts

United States National Arboretum
U.S. Department of Agriculture

American Forestry Association

United States Department of Agriculture

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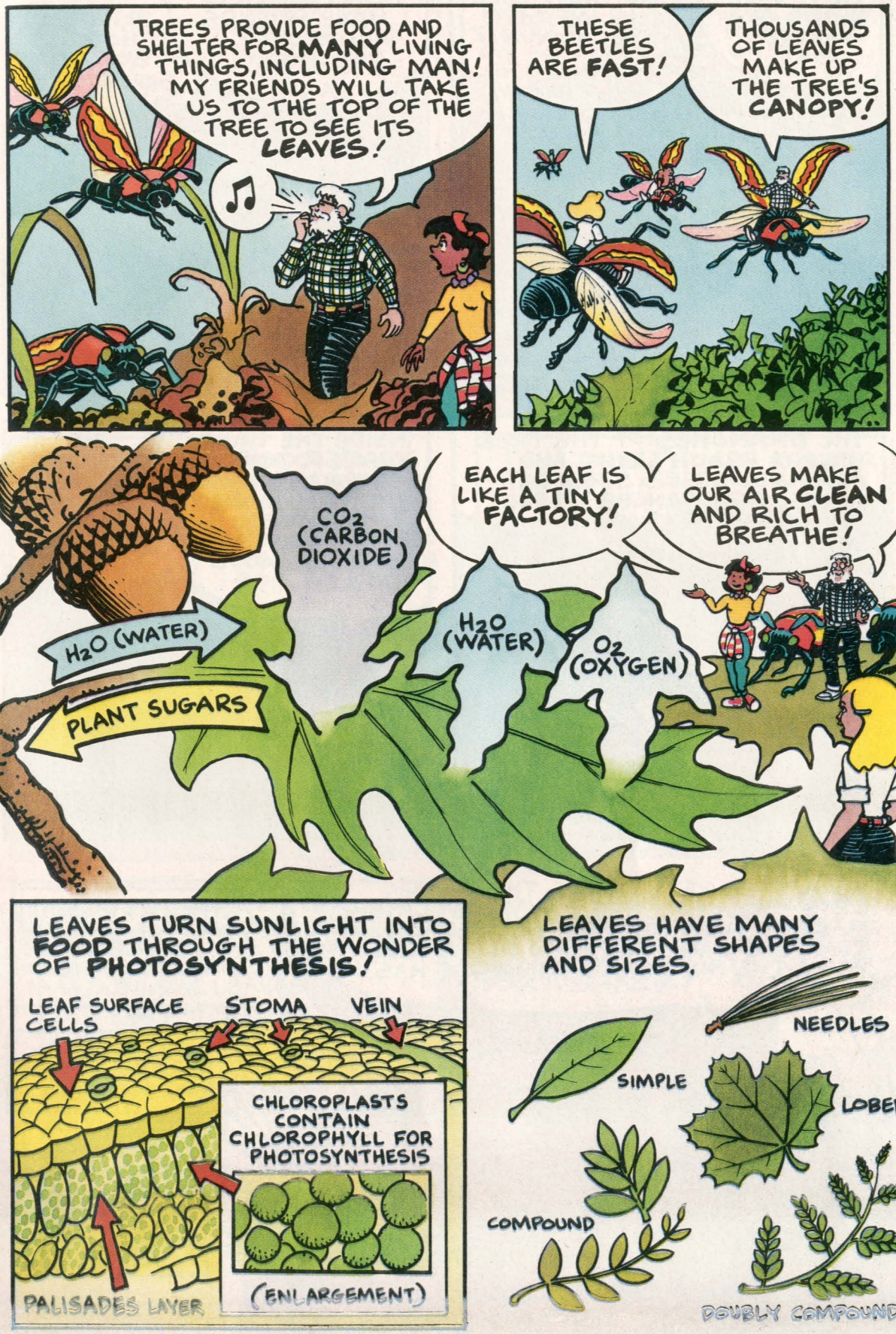
CAMP TOMORROW- WHERE YOUNG PEOPLE FROM ALL OVER THE WORLD GATHER TO SHARE IDEAS FOR A BETTER FUTURE!
OUR GROUP PROJECT IS TO STUDY HOW NATURAL RESOURCES AFFECT OUR WORLD!
TREES ARE AN IMPORTANT PART OF A HEALTHY WORLD!
THE AIR IN THE FOREST SEEMS SO FRESH AND CLEAN!
TREES GIVE OFF LOTS OF OXYGEN AND THEY CLEAN DUST FROM THE AIR!
THEY ALSO MAKE IT QUIET FOR BETTER CONCENTRATION!
YOU KNOW A LOT ABOUT TREES! THAT'S GOOD!
WHO SAID THAT!?
A TALKING TREE!?
HO HO! SOMETIMES I TALK ABOUT TREES SO MUCH I ALMOST DO FEEL LIKE ONE MYSELF!

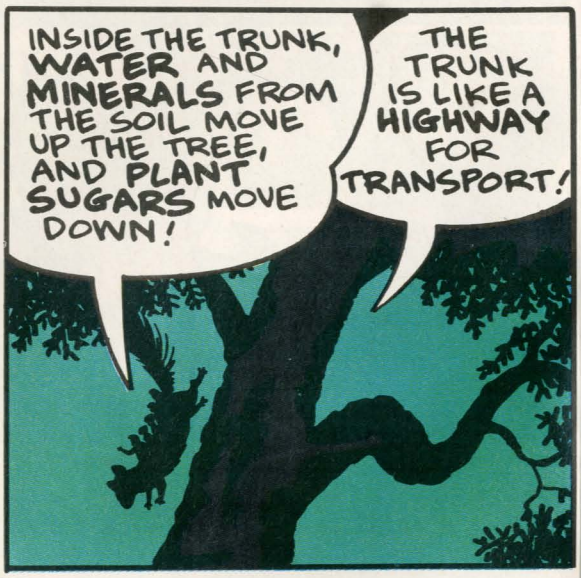
I'M MR. UNDERWOOD! I TAKE CARE OF THE FOREST! I'VE BEEN HERE A LONG TIME!
I'M AL FROM BRAZIL!
I'M GITA FROM NOR-WAY.
I'M ADA! I COME FROM NIGERIA!
BILL'S MY NAME! I'M FROM HERE IN THE U.S.A.
YOU MUST BE FROM THE CAMP. YOU'RE JUST IN TIME FOR THE TOUR!
WHAT TOUR?
YOU'LL TOUR THIS TREE! YOU'LL SEE WHAT ONE GREEN TREE CAN DO!
TREES PROTECT US AND CALM US. THEY TEACH US PATIENCE AND PEACE.
TREES ARE THE EARTH'S OLDEST LIVING THINGS! BRISTLECONE PINES IN THE AMERICAN WEST CAN BE OVER 4000 YEARS OLD!
TREES DO MANY THINGS FOR US. THEY EVEN GIVE US OXYGEN TO BREATHE.
WHAT ARE WE WAITING FOR!? LET'S SEE THE TREE!
WE MUST ALL JOIN HANDS! NOW CLOSE YOUR EYES!
WOW! WE'RE TINY!
LOOK AT ALL THE LIFE AROUND US!

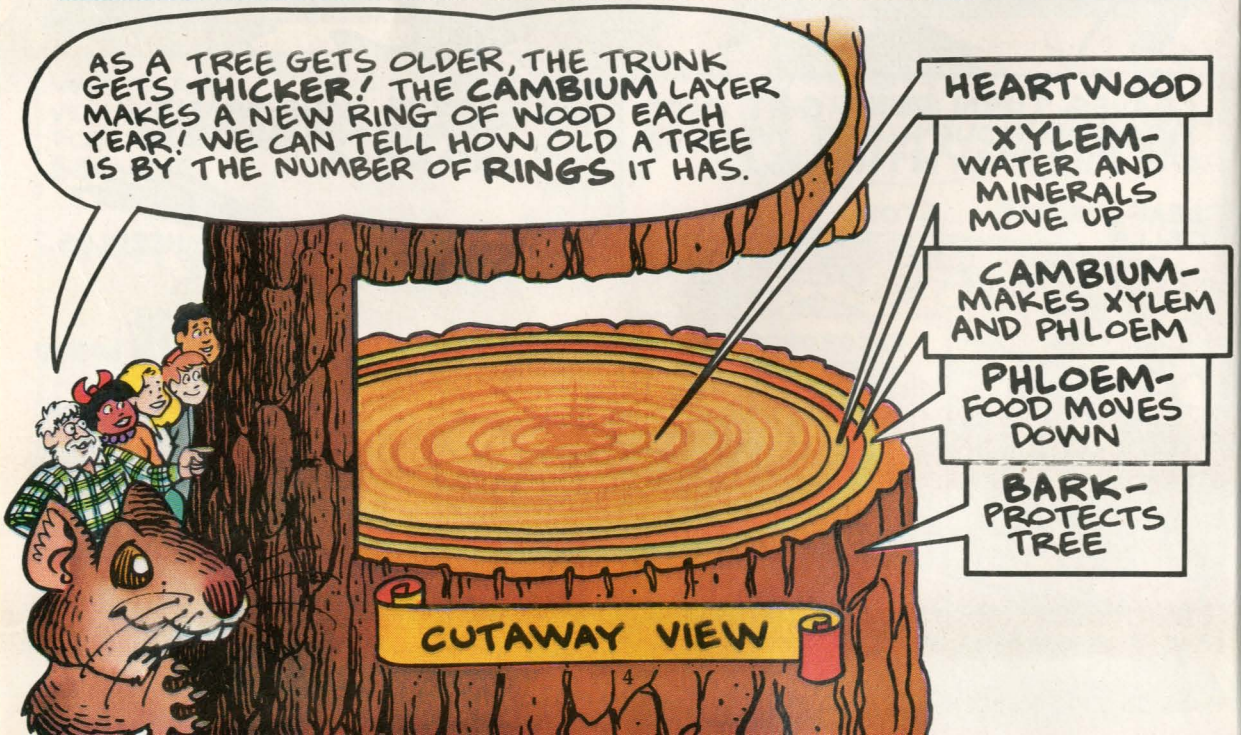

TREES PROVIDE FOOD AND SHELTER FOR MANY LIVING THINGS, INCLUDING MAN! MY FRIENDS WILL TAKE US TO THE TOP OF THE TREE TO SEE ITS LEAVES!
THESE BEETLES ARE FAST!
THOUSANDS OF LEAVES MAKE UP THE TREE'S CANOPY!
H_2O (WATER)
CO_2 (CARBON DIOXIDE)
PLANT SUGARS
H_2O (WATER)
O_2 (OXYGEN)
EACH LEAF IS LIKE A TINY FACTORY!
LEAVES MAKE OUR AIR CLEAN AND RICH TO BREATHE!
LEAVES TURN SUNLIGHT INTO FOOD THROUGH THE WONDER OF PHOTOSYNTHESIS!
LEAF SURFACE CELLS
STOMA
VEIN
CHLOROPLASTS CONTAIN CHLOROPHYLL FOR PHOTOSYNTHESIS
(ENLARGEMENT)
PALISADES LAYER
LEAVES HAVE MANY DIFFERENT SHAPES AND SIZES.
NEEDLES
SIMPLE
LOBED
COMPOUND
DOUBLY COMPOUND

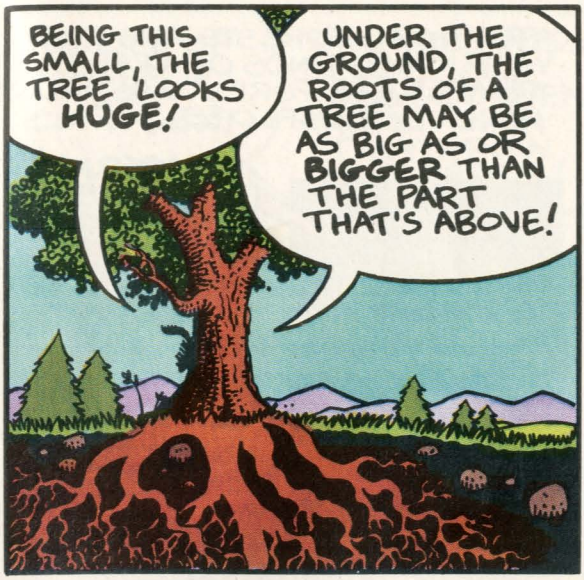
HEY! OUR RIDES ARE TAKING OFF!
HOW WILL WE GET DOWN!?

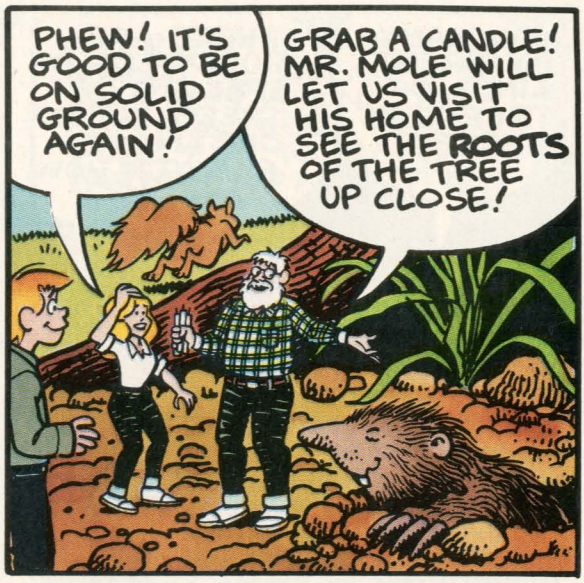
DON'T WORRY! I HAVE FRIENDS ALL OVER THE TREE!
I'VE RIDDEN HORSES, BUT NEVER SQUIRRELS!

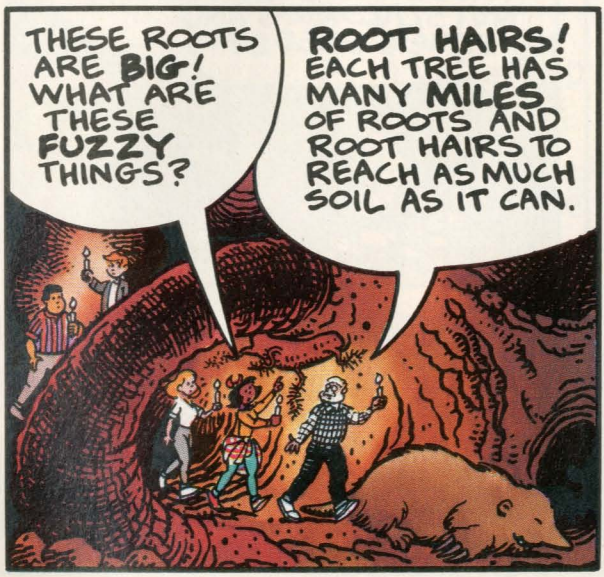
THE BRANCHES OF THE TREE HELP IT REACH LIGHT AND AIR! THE TREE'S TRUNK HOLDS THE BRANCHES TALL! THAT'S OUR NEXT STOP.

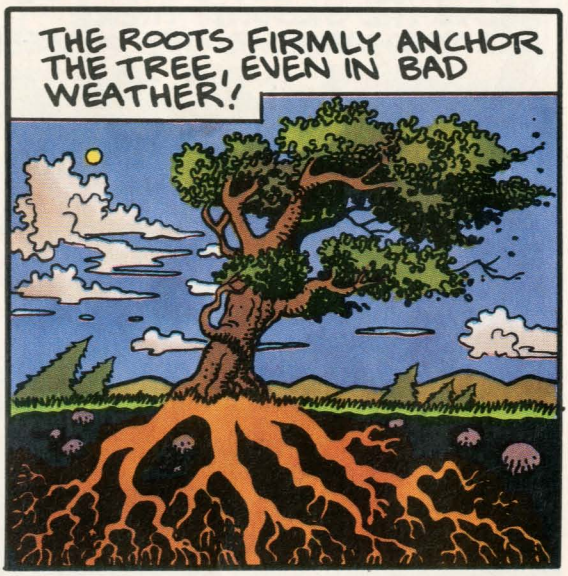

INSIDE THE TRUNK, WATER AND MINERALS FROM THE SOIL MOVE UP THE TREE, AND PLANT SUGARS MOVE DOWN!
THE TRUNK IS LIKE A HIGHWAY FOR TRANSPORT!


AS A TREE GETS OLDER, THE TRUNK GETS THICKER! THE CAMBIUM LAYER MAKES A NEW RING OF WOOD EACH YEAR! WE CAN TELL HOW OLD A TREE IS BY THE NUMBER OF RINGS IT HAS.
HEARTWOOD
XYLEM- WATER AND MINERALS MOVE UP
CAMBIUM- MAKES XYLEM AND PHLOEM
PHLOEM- FOOD MOVES DOWN
BARK- PROTECTS TREE
CUTAWAY VIEW

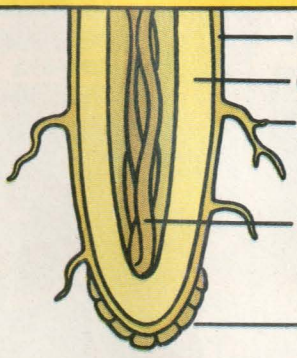

BEING THIS SMALL, THE TREE LOOKS HUGE!
UNDER THE GROUND, THE ROOTS OF A TREE MAY BE AS BIG AS OR BIGGER THAN THE PART THAT'S ABOVE!

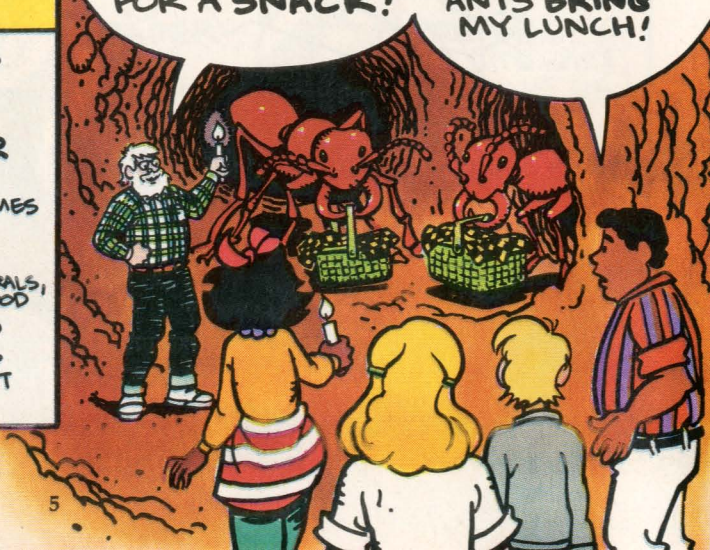

PHEW! IT'S GOOD TO BE ON SOLID GROUND AGAIN!
GRAB A CANDLE! MR. MOLE WILL LET US VISIT HIS HOME TO SEE THE ROOTS OF THE TREE UP CLOSE!


THESE ROOTS ARE BIG! WHAT ARE THESE FUZZY THINGS?
ROOT HAIRS! EACH TREE HAS MANY MILES OF ROOTS AND ROOT HAIRS TO REACH AS MUCH SOIL AS IT CAN.

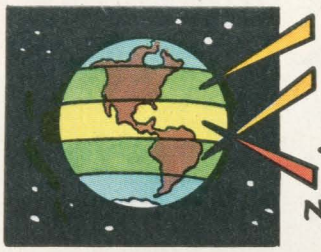


ROOTS **ABSORB** WATER AND MINERALS FROM THE SOIL, SO THE TREE CAN GROW. THEY ALSO STORE FOOD MADE BY THE LEAVES.





TROPICAL FORESTS ARE RICH WITH MANY KINDS OF TREES. **TEMPERATE** FORESTS USUALLY HAVE FEWER SPECIES.



WHAT WE CALL A TREE IS ANY LONG-LIVING WOODY PLANT WITH A SINGLE MAIN STEM OR TRUNK THAT DEVELOPS BRANCHES AT SOME DISTANCE ABOVE THE GROUND. THERE ARE TWO MAIN GROUPS OF TREES.

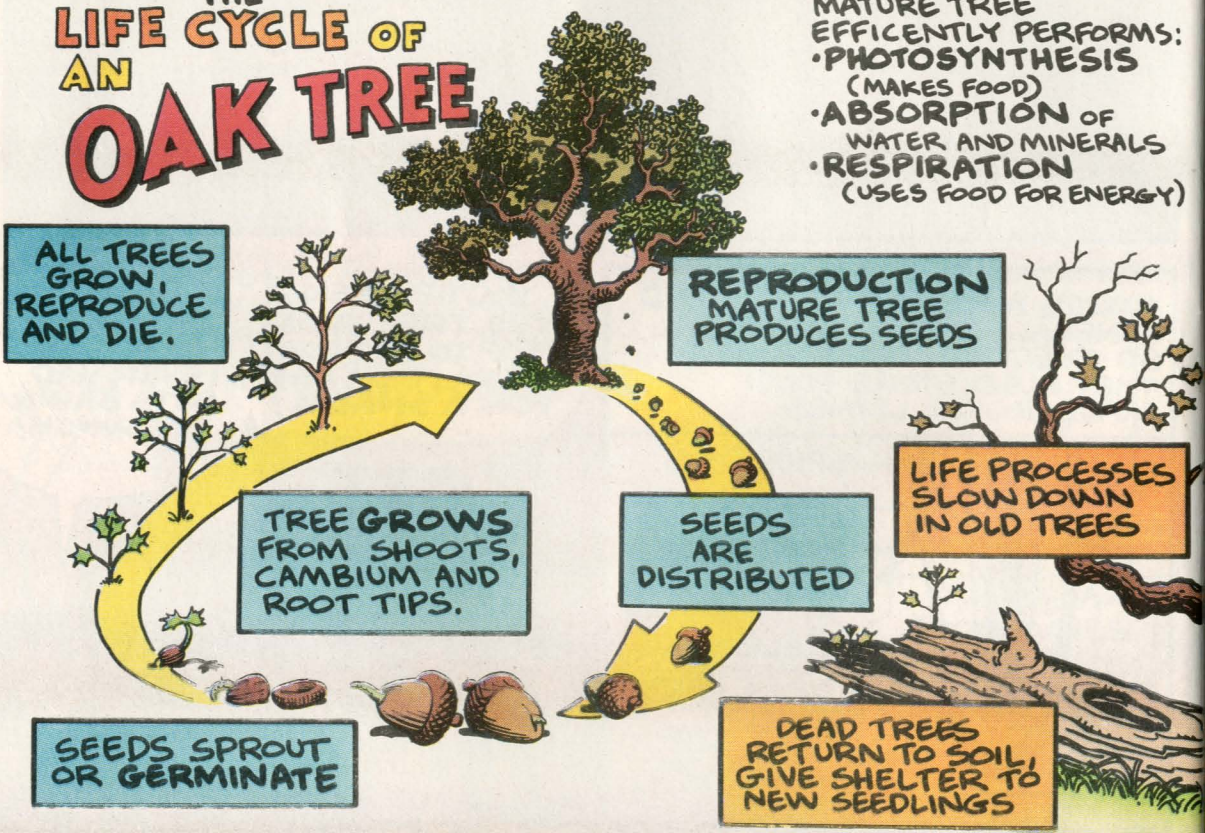
CONIFEROUS, OR NEEDLELEAF, OR SOFTWOOD.

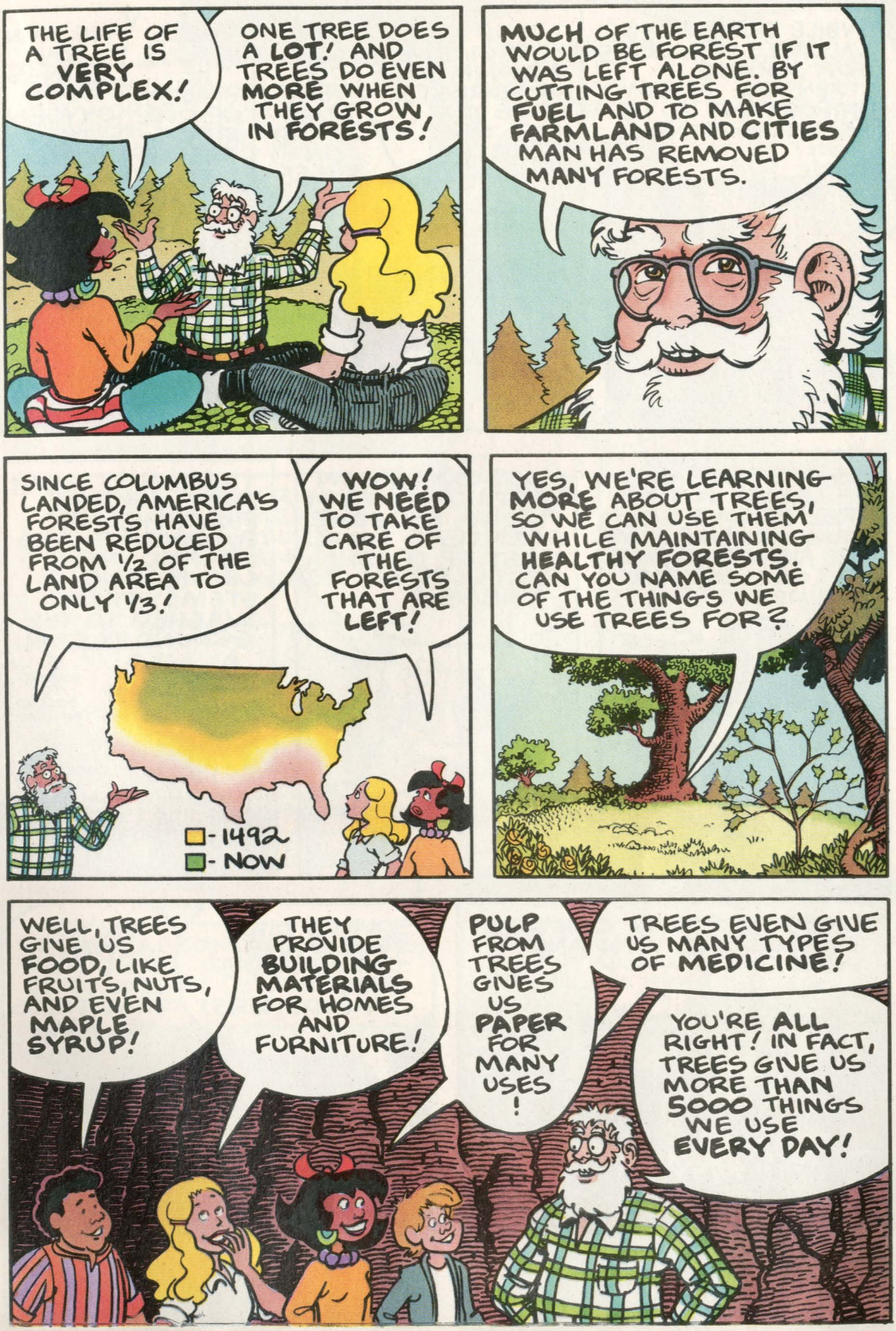
FLOWERING, OR BROADLEAF, OR HARDWOOD.

TREES REPRODUCE IN DIFFERENT WAYS. PINE TREES PRODUCE SEEDS IN CONES. FLOWERING TREES PRODUCE FRUITS, NUTS, ACORNS AND OTHER SEEDS!

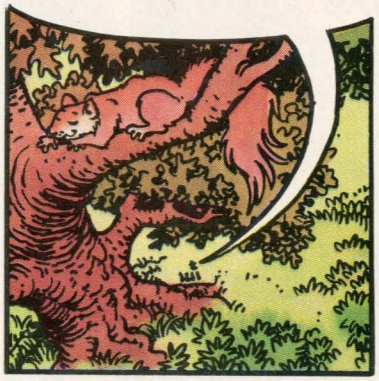
THE LIFE CYCLE OF AN OAK TREE

MATURE TREE EFFICENTLY PERFORMS:
- **PHOTOSYNTHESIS** (MAKES FOOD)
- **ABSORPTION** OF WATER AND MINERALS
- **RESPIRATION** (USES FOOD FOR ENERGY)


ALL TREES GROW, REPRODUCE AND DIE.
REPRODUCTION MATURE TREE PRODUCES SEEDS
LIFE PROCESSES SLOW DOWN IN OLD TREES
SEEDS ARE DISTRIBUTED
TREE GROWS FROM SHOOTS, CAMBIUM AND ROOT TIPS.
SEEDS SPROUT OR GERMINATE
DEAD TREES RETURN TO SOIL, GIVE SHELTER TO NEW SEEDLINGS


THE LIFE OF A TREE IS VERY COMPLEX!
ONE TREE DOES A LOT! AND TREES DO EVEN MORE WHEN THEY GROW IN FORESTS!
MUCH OF THE EARTH WOULD BE FOREST IF IT WAS LEFT ALONE. BY CUTTING TREES FOR FUEL AND TO MAKE FARMLAND AND CITIES MAN HAS REMOVED MANY FORESTS.
SINCE COLUMBUS LANDED, AMERICA'S FORESTS HAVE BEEN REDUCED FROM 1/2 OF THE LAND AREA TO ONLY 1/3!
WOW! WE NEED TO TAKE CARE OF THE FORESTS THAT ARE LEFT!
- 1492
- NOW
YES, WE'RE LEARNING MORE ABOUT TREES, SO WE CAN USE THEM WHILE MAINTAINING HEALTHY FORESTS. CAN YOU NAME SOME OF THE THINGS WE USE TREES FOR?
WELL, TREES GIVE US FOOD, LIKE FRUITS, NUTS, AND EVEN MAPLE SYRUP!
THEY PROVIDE BUILDING MATERIALS FOR HOMES AND FURNITURE!
PULP FROM TREES GIVES US PAPER FOR MANY USES!
TREES EVEN GIVE US MANY TYPES OF MEDICINE!
YOU'RE ALL RIGHT! IN FACT, TREES GIVE US MORE THAN 5000 THINGS WE USE EVERY DAY!

WHILE TREES PROVIDE VALUABLE RESOURCES FOR OUR **USE**, THEY ARE ALSO IMPORTANT TO US AS LIVING THINGS.



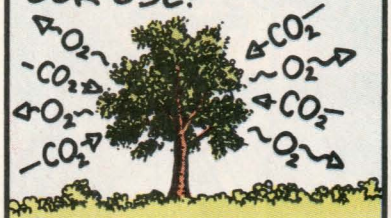
LIVING TREES, ESPECIALLY **GROWN** TREES IN **FORESTS**, MAKE OUR LIFE ON EARTH **POSSIBLE**.

HOW CAN OUR VERY **LIVES** DEPEND ON TREES?

TREES IMPROVE THE QUALITY OF OUR **ATMOSPHERE**.

WE SAW HOW LEAVES PUT OXYGEN INTO THE AIR!

YES, THE THOUSANDS OF LEAVES IN THIS TREE REMOVE CO_2 (CARBON DIOXIDE) FROM THE AIR AND RELEASE O_2 (OXYGEN) FOR OUR USE!

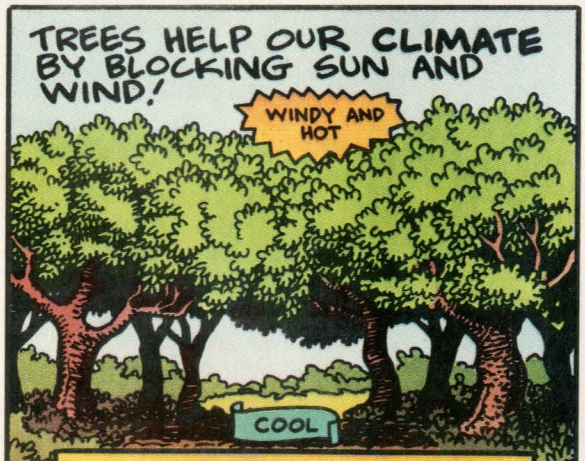


IN ONE YEAR, **ONE** BEECH TREE TRANSFORMS ENOUGH CO_2 INTO O_2 TO FILL **800** HOUSES!

MOST OXYGEN ON EARTH COMES FROM PLANTS, AND SOME SCIENTISTS THINK MOST OF IT IS PRODUCED BY **TREES**!

TREES ALSO CLEAN **DUST** AND **DIRT** FROM THE AIR. POLLUTANTS ARE TRAPPED ON LEAVES AND STEMS, THEN **WASHED** TO THE GROUND BY RAIN.

TREES HELP OUR **CLIMATE** BY BLOCKING SUN AND WIND!

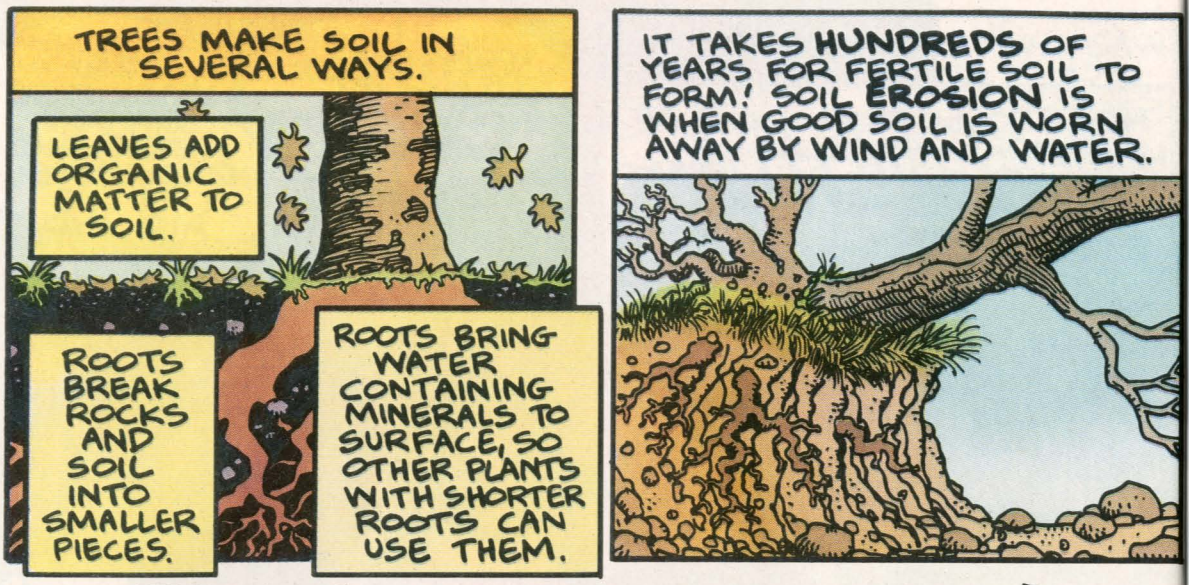


ON A HOT DAY, THE FLOOR OF A FOREST MAY BE **25 DEGREES** COOLER THAN AT THE CANOPY.

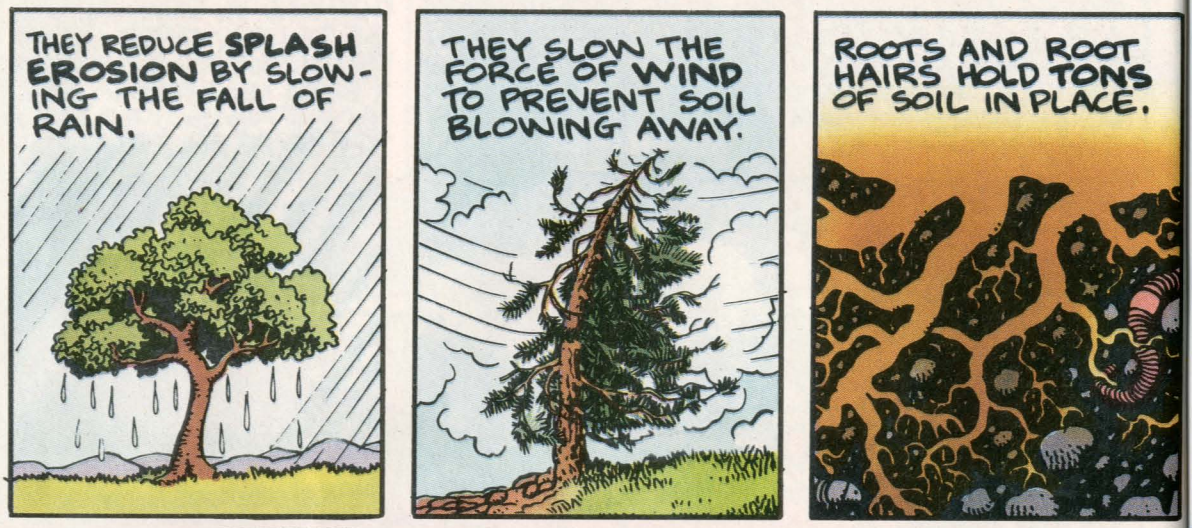
SOUNDS LIKE TREES ARE THE WORLD'S **BEST** AIR CONDITIONERS!

WE'RE ALWAYS FINDING **NEW** WAYS THAT TREES HELP US!

NOISE POLLUTION IS ONE OF OUR WORST SOURCES OF TENSION. TREES DO A GREAT JOB OF REDUCING NOISE.
DON'T TREES HELP US BY WORKING WITH WATER?
YES! EACH TREE STORES WATER AND CIRCULATES IT IN THE AIR AND SOIL!
TREES ADD WATER TO THE AIR BY TRANSPIRATION. AN ACRE OF MATURE TREES CAN TRANSPIRE 600 TONS OF WATER PER DAY!
DURING A DRY SEASON, OR DROUGHT, A TREE IS LIKE AN OASIS OF WATER!
BY ADDING THIS MOISTURE TO THE AIR, TREES HELP MAKE RAIN!
TREES HELP CONTROL FLOODS, TOO! LEAVES STOP THE FALL OF RAIN, AND LET IT DROP GENTLY TO THE GROUND.
SINCE TREES MAKE AND HOLD SOIL, MORE WATER IS ABSORBED. RUNOFF WATER THAT CAUSES FLOODS IS REDUCED.
WAIT A MINUTE! YOU MEAN TREES MAKE SOIL, TOO!?
TREES ARE VITAL TO BUILDING AND HOLDING FERTILE SOIL!

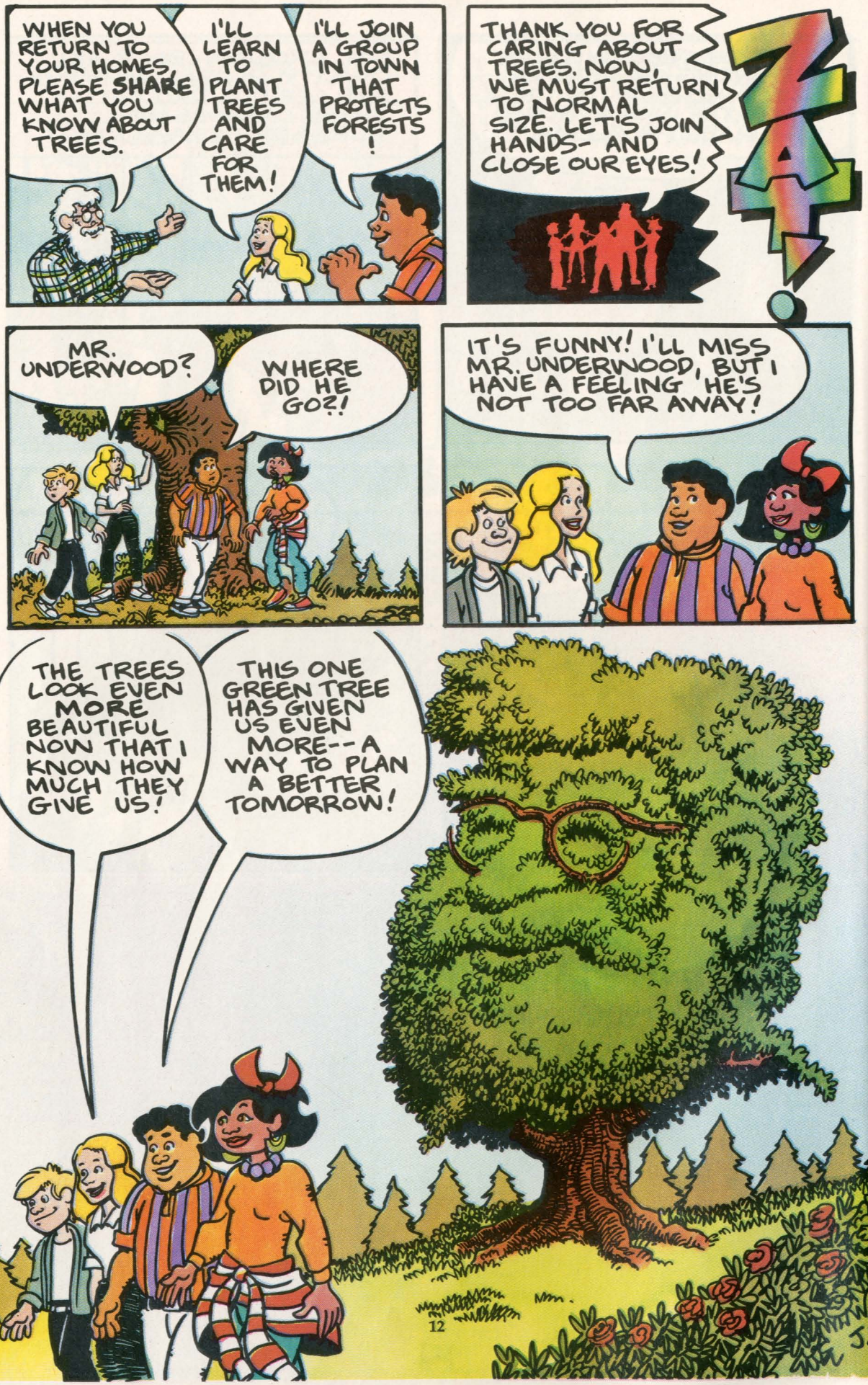

TREES MAKE SOIL IN SEVERAL WAYS.
LEAVES ADD ORGANIC MATTER TO SOIL.
ROOTS BREAK ROCKS AND SOIL INTO SMALLER PIECES.
ROOTS BRING WATER CONTAINING MINERALS TO SURFACE, SO OTHER PLANTS WITH SHORTER ROOTS CAN USE THEM.
IT TAKES HUNDREDS OF YEARS FOR FERTILE SOIL TO FORM! SOIL EROSION IS WHEN GOOD SOIL IS WORN AWAY BY WIND AND WATER.

TREES CONSERVE SOIL!


THEY REDUCE SPLASH EROSION BY SLOWING THE FALL OF RAIN.
THEY SLOW THE FORCE OF WIND TO PREVENT SOIL BLOWING AWAY.
ROOTS AND ROOT HAIRS HOLD TONS OF SOIL IN PLACE.

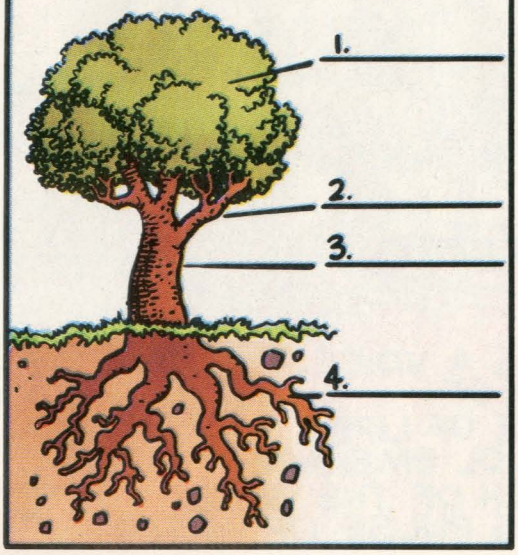
ALL OVER THE WORLD, SOIL EROSION IS A PROBLEM. IN TROPICAL RAIN FORESTS THE PROBLEM IS CRITICAL!
AS PEOPLE CUT TREES WITHOUT REPLANTING OR LETTING NEW ONES GROW, RAIN AND WIND REMOVE THE SOIL. WITHOUT CAREFUL MANAGEMENT, WHAT WAS A HOME FOR THOUSANDS OF PLANTS AND ANIMALS CAN BECOME A WASTELAND.

IF WE CUT TREES WITHOUT REPLANTING OR LETTING NEW ONES GROW IN THEIR PLACE, THE WHOLE WORLD WILL HAVE PROBLEMS.
SOIL EROSION, POOR AIR QUALITY, GLOBAL WARMING AND SERIOUS DROUGHT-- THESE CHANGES MAY ALREADY BE HAPPENING!
HOT AIN'T IT
WE NEED TO TAKE CARE OF THE FORESTS WE STILL HAVE!
AND WE NEED TO PLANT NEW TREES NOW!
AS YOU'VE SEEN, THIS ONE GREEN TREE PROVIDES HOMES AND FOOD FOR MANY ANIMALS!
ALL LIFE, INCLUDING MAN, NEEDS AIR, WATER AND FERTILE SOIL. NOTHING CAN REPLACE THESE THINGS THAT TREES GIVE US.

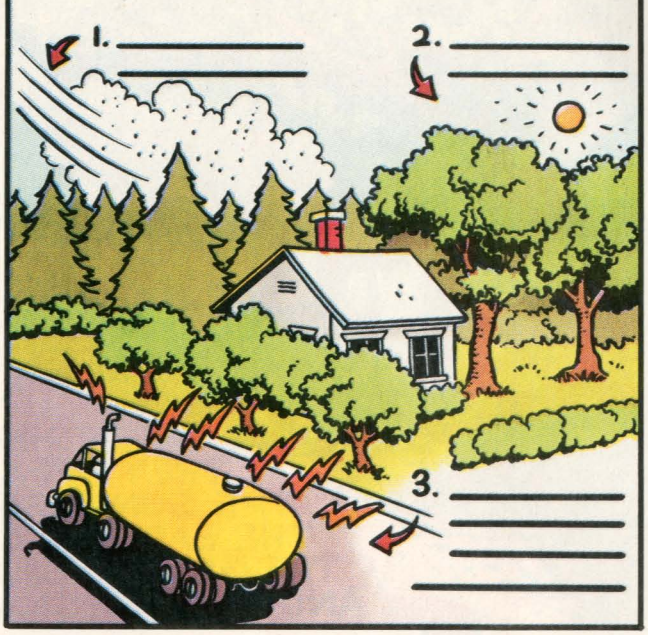

WHEN YOU RETURN TO YOUR HOMES, PLEASE SHARE WHAT YOU KNOW ABOUT TREES.
I'LL LEARN TO PLANT TREES AND CARE FOR THEM!
I'LL JOIN A GROUP IN TOWN THAT PROTECTS FORESTS!
THANK YOU FOR CARING ABOUT TREES. NOW, WE MUST RETURN TO NORMAL SIZE. LET'S JOIN HANDS- AND CLOSE OUR EYES!
ZAP!
MR. UNDERWOOD?
WHERE DID HE GO?!
IT'S FUNNY! I'LL MISS MR. UNDERWOOD, BUT I HAVE A FEELING HE'S NOT TOO FAR AWAY!
THE TREES LOOK EVEN MORE BEAUTIFUL NOW THAT I KNOW HOW MUCH THEY GIVE US!
THIS ONE GREEN TREE HAS GIVEN US EVEN MORE--A WAY TO PLAN A BETTER TOMORROW!
J.M.

WHAT'S THAT NAME?

LABEL THE MAIN PARTS OF THIS TREE (ANSWERS BELOW).



HOW ARE TREES HELPING THIS HOUSE? (ANSWERS BELOW)



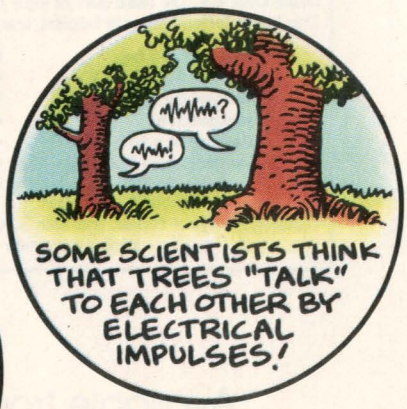
FUN FACTS ABOUT TREES

BALD CYPRESS TREES HAVE ROOTS THAT GROW ABOVE THE GROUND CALLED KNEES.

THE 5000 YEAR OLD MONTEZUMA CYPRESS TREE OF TULE, MEXICO, IS 110 FEET HIGH BUT 112 FEET AROUND AT THE TRUNK.

THE WORLD'S TALLEST TREES ARE THE COASTAL REDWOODS OF CALIFORNIA. THEY CAN BE 350 FEET TALL!

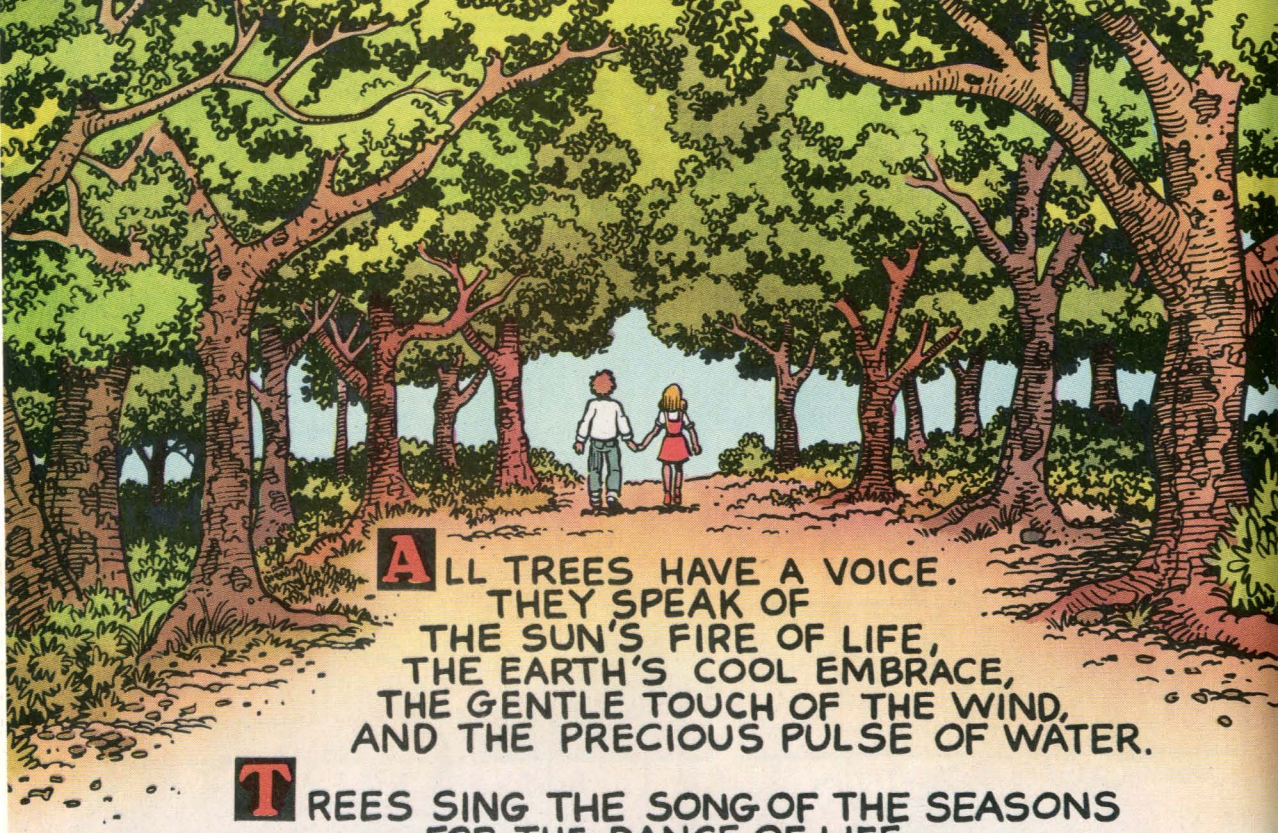
MOST OAK TREES PRODUCE ABOUT 5000 ACORNS EACH YEAR. ONE OAK IN TEXAS PRODUCED 100,000 IN ONE YEAR!



SOME SCIENTISTS THINK THAT TREES "TALK" TO EACH OTHER BY ELECTRICAL IMPULSES!

WHAT'S THAT NAME?
① LEAVES, OR CANOPY
② BRANCH
③ TRUNK
④ ROOT

TREES HELP BY:
① BLOCKING WIND
② SHADING SUN
③ REDUCING NOISE OR CLEANING AIR


ALL TREES HAVE A VOICE.
THEY SPEAK OF
THE SUN'S FIRE OF LIFE,
THE EARTH'S COOL EMBRACE,
THE GENTLE TOUCH OF THE WIND,
AND THE PRECIOUS PULSE OF WATER.
TREES SING THE SONG OF THE SEASONS
FOR THE DANCE OF LIFE.
TODAY, PAUSE FOR ONE MOMENT, AND
LISTEN TO THE TREES!

***FREE** Sample Copy! Now available...*

ONE GREEN TREE

Give young people and families a lesson they'll remember!
Make **ONE GREEN TREE** part of your educational programs about trees.
This full-color educational booklet teaches:

- The parts of a tree
- How trees grow
- Photosynthesis
- Transpiration
- Life cycle of a tree
- How trees give food and shelter to life
- How trees control soil erosion
- How trees control flooding
- How trees reduce noise
- How trees improve air quality
- The different types of forests
- The importance of forests
- Conservation strategies

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